

APLETODON PELLEGRINI (CHABANAUD) AND OTHER
CLINGFISHES (PISCES: GOBIESOCIDAE) FROM
SOUTH WEST AFRICA

By

MARY-LOUISE PENRITH

South African Museum, Cape Town

(With 5 figures)

[MS. received 14 May 1969]

CONTENTS

	PAGE
Introduction	123
Systematic discussion	125
Remarks on distribution	132
Summary	132
Acknowledgements	132
References	134

INTRODUCTION

It is not unusual that the presence of a group such as the clingfishes, most of which are small and inconspicuous, should remain undetected in areas in which very little collecting has been done. Smith (1964), discussing the clingfishes of the western Indian ocean and the Red Sea, pointed out that no clingfishes had up to that time been recorded from tropical West Africa south of Ghana. His distribution maps showed no records of Gobiesocidae on the western African coast between Ghana in the north and Port Nolloth in the south.

Smith (1964) suggested that the lack of records of Gobiesocidae from the west coast of Africa was probably due rather to lack of sampling of the area than to a genuine deficit of clingfishes there, and this appears to be true. Collecting on the South West African coast by the South African Museum and the State Museum, Windhoek, has indicated that three species of Gobiesocidae occur intertidally in South West Africa, and one of these has also been found in southern Angola.

Smith (1964) listed five species of Gobiesocidae (*Apletodon knysnaensis* Smith, *Chorisochismus dentex* (Pallas), *Eckloniaichthys scylliorhiniceps* Smith, *Lepadichthys coccinotaenia* Regan, *Pherallodus smithi* Briggs) as occurring intertidally in the South African region. Of these, *Pherallodus smithi* is known from the single type specimen collected at Durban in 1934, and *Lepadichthys coccinotaenia*, a species of the tropical western Indian ocean, occurs rarely on the Natal coast. The other three species are found further westwards. Briggs (1955) recorded four species from north-west African shores and islands (*Apletodon pellegrini* (Chaba-

ANNALS OF THE SOUTH AFRICAN MUSEUM
DECEMBER 1969

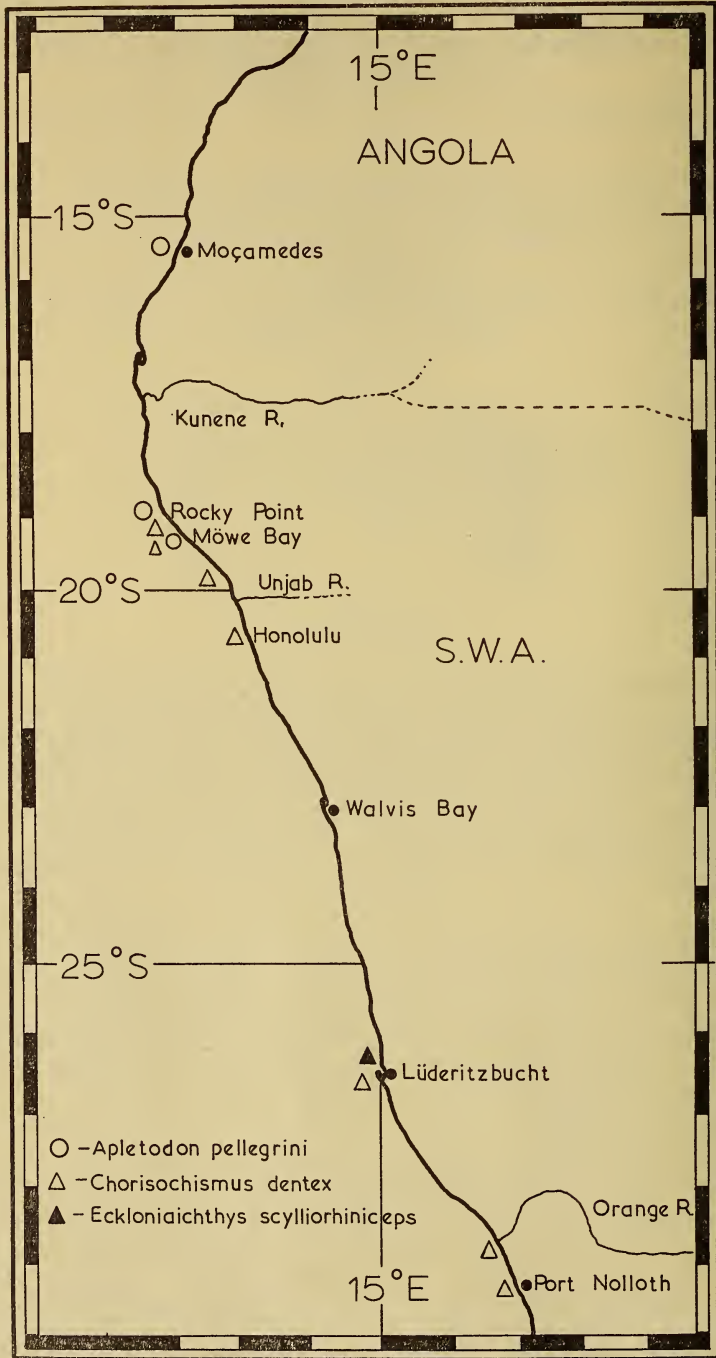


Fig. 1. Records of clingfishes from the South West African region.

naud), *Lepadogaster candollei* Risso, *Lepadogaster lepadogaster lepadogaster* (Bonna-terre), *Lepadogaster zebrina* Lowe), while the genus *Diplecogaster* is represented in deeper water in this area, as it is off southern Africa (Briggs, 1955; Smith, 1964). Two specimens of *Apletodon pellegrini* in the Muséum d'Histoire Naturelle, Paris, collected at Annobón island just south of the equator by A. Stauch, represent the southernmost record for any clingfish in the West African tropical region.

The three species here recorded from South West Africa are *Chorisochismus dentex*, *Eckloniaichthys scylliorhiniceps*, and *Apletodon pellegrini*. The localities from which these species were recorded are shown in figure 1. The South West African records of *Chorisochismus dentex* and *Eckloniaichthys scylliorhiniceps* represent considerable north-westward extensions of their distributional ranges.

The identification of the South West African specimens of *Apletodon* necessitated comparison with both northern and southern (*Apletodon knysnaensis*) specimens, and this comparison led me to conclude that *Apletodon pellegrini* and *A. knysnaensis* are not specifically distinct in spite of their apparent geographical separation.

Abbreviations used

P.M. — Muséum d'Histoire Naturelle, Paris.

R.U.C. — J. L. B. Smith Institute of Ichthyology, Rhodes University, Grahamstown.

S.A.M. — South African Museum, Cape Town.

S.M. — State Museum, Windhoek, South West Africa.

U.Z.M. — Universitets Zoologiska Museum, Copenhagen, Denmark.

SYSTEMATIC DISCUSSION

Apletodon pellegrini (Chabanaud, 1925)

(Fig. 2)

Lepadogaster (Mirbelia) Pellegrini Chabanaud, 1925: 283, 286.

Apletodon pellegrini: Briggs, 1955: 27 (synonymy and references). Blanc, Cadenat & Stauch, 1968: 252.

Apletodon knysnaensis Smith, 1964: 590, pl. 93 B, C, pl. 96 A-F, pl. 97 B-F.

Material on which description is based: 1 specimen, 29 mm standard length, S.A.M. 24942, intertidal pool, Moçamedes, southern Angola; 1 specimen, 26 mm standard length, S.M. 5216, intertidal pool, Rocky Point, S.W.A.; 2 specimens, 25 & 22 mm standard length, S.A.M. 25247, intertidal pools, Rocky Point, S.W.A.; 1 specimen, 34 mm standard length, S.A.M. 25263, intertidal pool, Rocky Point, S.W.A.; 2 specimens, 42 & 32 mm standard length, S.A.M. 25257, intertidal pools, Möwe Bay, S.W.A.; 1 specimen, 34 mm standard length, S.M. 5268, intertidal pool, Möwe Bay, S.W.A.

Other material examined: 3 specimens, P.M. 25-239, 25-240, 25-241, Cap

Blanc (syntypes); 1 specimen, P.M. 07-257, Senegal (syntype); 2 specimens, P.M. 59-65, 59-66, Senegal; 2 specimens, P.M. 1965-623, Annobón Island; 3 specimens, U.Z.M., Senegal (Dakar); 1 specimen, R.U.C., Knysna (allotype of *A. knysnaensis*); 1 specimen, R.U.C., Knysna (holotype of *A. knysnaensis*); 5 specimens, R.U.C., Knysna; 1 specimen, R.U.C., Lambert's Bay; 5 specimens, R.U.C., Bird Island, Port Elizabeth; 4 specimens, S.A.M. 25250, Froggy Pond, False Bay; 9 specimens (10-20 mm standard length), S.A.M. 25257 & S.M. 5269-5271, Möwe Bay, S.W.A.

Description: D. 5-6; A. 5-6; P. 21-22; C. 10-12. Gills three and one half. Third gill arch with six minute gill-rakers. Maximum depth of body 4.4-5.7 in standard length.

Head broad, depressed, 2.3-2.4 in standard length, maximum breadth of head 2.75-3.25 in standard length. Eye round, orbit diameter 4.5-6 in head. Interorbital width greater than orbit diameter, 3-3.7 in head. Snout a little longer than eye, rounded, 3-3.7 in head. Anterior nostril tubular, posterior nostril a simple pore. Mouth terminal, upper jaw 2.25-3.7 in head, breadth of mouth at posterior angles of jaw 2-2.8 in head. Teeth conical, caniniform; four distinctly compressed, enlarged, incisiform teeth in front of upper jaw of 25, 34 (both), 32, and 42 mm specimens.

Dorsal and anal fins in posterior fourth of body. Anus anterior to dorsal origin, slightly nearer to pectoral tip than to caudal base. Pelvic disc double, fringed with small branched papillae, disc length 2.9-3.8 in standard length. Caudal peduncle very short, 4.5-5.5 in head length, deeper than long, depth 3-3.7 in head length. Caudal fin rounded.

Colouring: Upper parts dark red to reddish brown in Rocky Point specimens and 34 mm Möwe Bay specimen, light green in 32 and 42 mm Möwe Bay specimens. Angolan specimen red with greenish mottling. A light bar across interorbital in the three largest specimens. Underparts of all specimens lighter, creamy buff. Throat with fine red spots in all except the 32 and 42 mm specimens. Pectoral fins hyaline; pelvic disc hyaline in most specimens, orange in 32 and 42 mm specimens. Dorsal, anal, and caudal fins barred with main colour of upper parts.

Habitat: Intertidal; the Rocky Point specimens were collected amongst mussels (*Perna perna* (Linnaeus)) and coralline algae in pools at the middle levels of the intertidal zone of the shore. The Möwe Bay specimens were collected under large stones in pools at the middle levels of the shore amongst brachiopods (*Discinisca tenuis* (Sowerby)).

Distribution: Dakar, Senegal, to the Cape Verde, Canary, and Madeira Islands (Briggs, 1955); Annobón Island (Blanc, Cadenat & Stauch, 1968); Lambert's Bay to Port Elizabeth (Smith, 1964).

Remarks

Three species have been included in the genus *Apletodon* Briggs: *A. pellegrini*; *A. microcephalus* (Brook), from Sicily to Scotland (Briggs, 1955), with a sub-

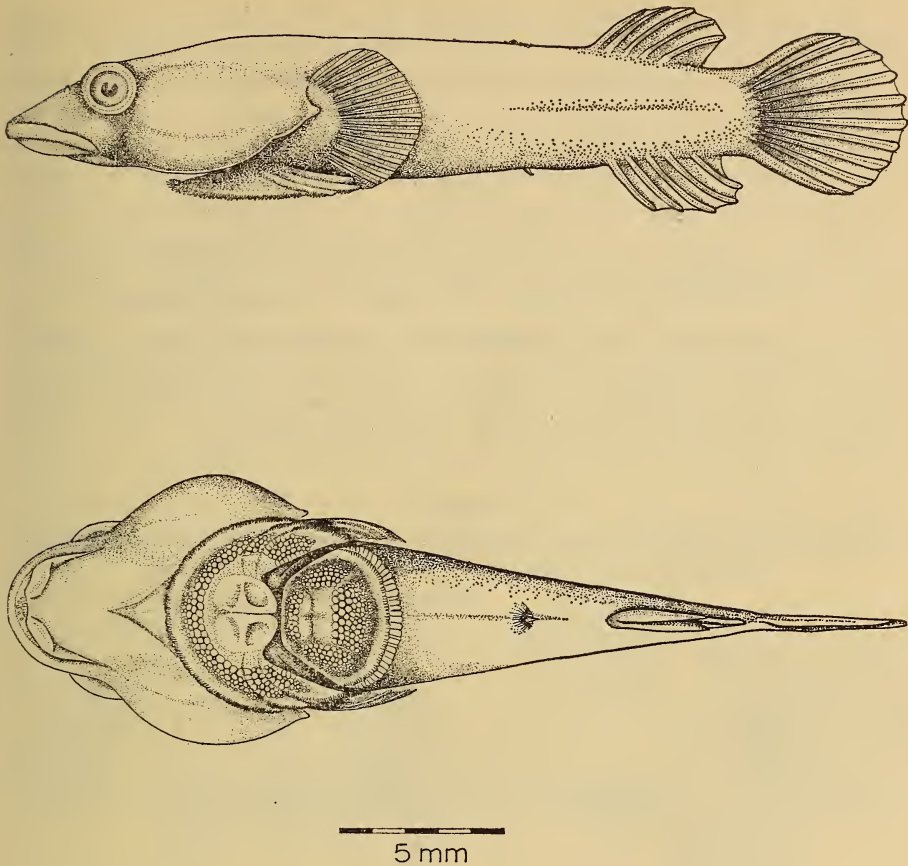


Fig. 2. *Apletodon pellegrini* (Chabanaud).

species *A. m. bacescui* Antoniu Murgoci from the Black Sea (Murgoci, 1964); and *A. knysnaensis* Smith, from the southern coast of South Africa from Lambert's Bay to Port Elizabeth (Smith, 1964).

Comparison of specimens of *A. pellegrini* and the typical form of *A. microcephalus* indicates that they are two clearly distinct species which differ in a number of features, the most marked difference being the considerably narrower head of *A. microcephalus*. *A. pellegrini* and *A. knysnaensis* are by no means as readily separable.

Smith (1964) distinguished *A. knysnaensis* from *A. pellegrini* chiefly on the length of the head in profile and the position of the anus with regard to the pectoral fin and the caudal base. He stated that *A. knysnaensis* was extremely similar to *A. pellegrini*, and that, but for the great distance separating the two forms geographically, he might be tempted to accord the southern form sub-specific status only.

I can find no difference between the South West African and Angolan specimens and specimens of *A. pellegrini* from the northern hemisphere and Annobón Island. Furthermore, comparison of the northern hemisphere, Angolan, and South West African specimens of *A. pellegrini* with specimens, including the types, of *A. knysnaensis*, indicates that these two species are in fact indistinguishable. The position of the anus with regard to the pectoral tip and the caudal base appears to vary, but in the majority of specimens (all the northern hemisphere, Annobón, and Angolan/South West African specimens and several of the southern ones) the anus was found to be slightly nearer the pectoral tip. As far as the profile head length is concerned, there is much overlap: measurements are given in table I. Judging from the proportions given by Smith (1964), he may have made his measurements slightly differently from mine, but the difference between southern and northern forms is in any event so slight as not to warrant even subspecific separation.

TABLE I

Comparison of head lengths (profile) of *Apletodon pellegrini* from the northern hemisphere, Angola/South West Africa, and the southern coast of South Africa.

Locality	Standard length (mm)	Head length in standard length
Cap Blanc	25	2.3
Cap Blanc	29	2.2
Senegal	28	2.2
Senegal	20	2.2
Dakar	28	2.3
Dakar	20	2.5
Dakar	18	2.3
Moçamedes	29	2.4
Rocky Point	34	2.4
Rocky Point	25	2.3
Rocky Point	26	2.4
Rocky Point	22	2.4
Möwe Bay	42	2.3
Möwe Bay	34	2.4
Möwe Bay	32	2.3
Lambert's Bay	32	2.3
False Bay	25	2.3
False Bay	21	2.3
False Bay	20	2.5
False Bay	21	2.3
Knysna	33	2.4
Knysna	24	2.4
Knysna	32	2.5
Knysna	29	2.3
Knysna	34	2.4
Knysna	24	2.4
Knysna	23	2.7
Port Elizabeth	25	2.5
Port Elizabeth	23	2.6
Port Elizabeth	26	2.6
Port Elizabeth	25	2.8
Port Elizabeth	23	2.3

It seems then that there are two species of the genus *Apletodon*, one confined to the North Atlantic and Mediterranean region, and one widely distributed along the African coast, including offshore islands.

Chorisochismus dentex (Pallas, 1769)

(Fig. 3)

Cyclopterus dentex Pallas, 1769: 6, pl. 1.

Chorisochismus dentex: Günther, 1861: 490. Barnard, 1927: 423. Smith, 1949: 384, pl. 87 fig. 1086; 1964: 587, pl. 94 A, B, C. Briggs, 1955: 40 (synonymy and references).

Material: 7 specimens, 92–167 mm standard length, S.M. 4929–4934, intertidal pools, Rocky Point, S.W.A.; 6 specimens, 99–190 mm standard length, S.A.M. 25221, intertidal pools, Rocky Point, S.W.A.; 1 specimen, 115 mm standard length, S.M. 4405, intertidal pool, 42 miles north of Unjab River mouth, S.W.A.; 1 specimen, 133 mm standard length, S.A.M. 25228 intertidal pool, 42 miles north of Unjab River mouth; 1 specimen, 128 mm standard length, S.A.M. 25231, Honolulu, S.W.A.; 13 specimens, 11–115 mm standard length,

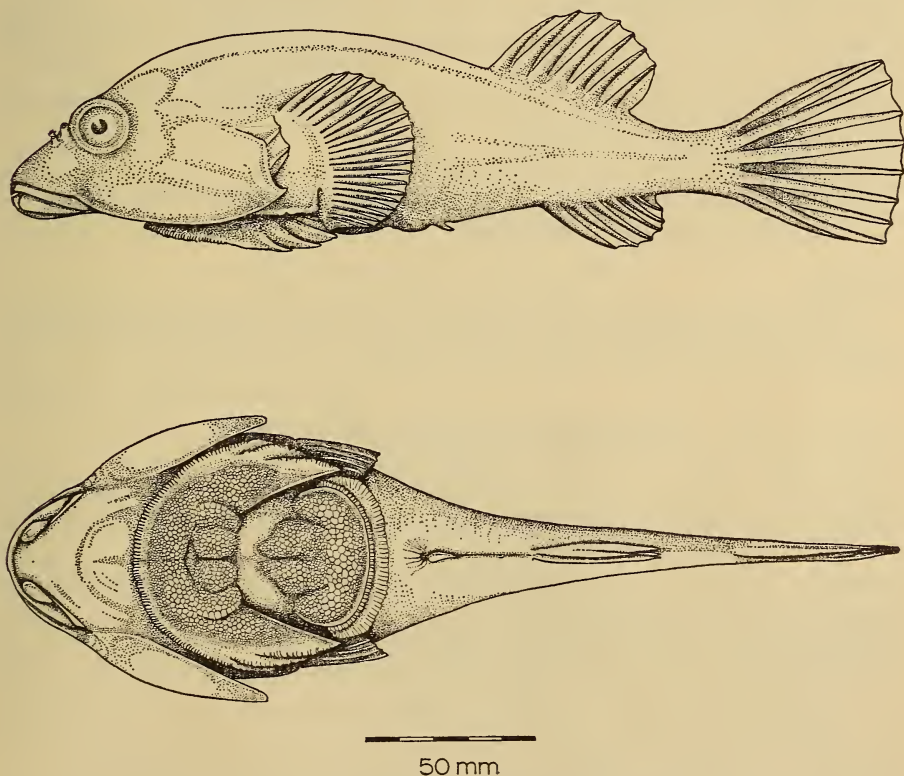


Fig. 3. *Chorisochismus dentex* (Pallas).

S.A.M. 24209, Lüderitzbucht, S.W.A.; 22 specimens, 11–84 mm standard length, S.A.M. 25248, Lüderitzbucht, S.W.A.

Description: D. 7–8; A. 6; P. 21–23; C. 9–10. Gills three and one half. Second gill arch with four minute gill-rakers. Maximum depth of body 3.2–4.1 in standard length in 84–190 mm specimens, 4.5–5.3 in standard length in smaller specimens.

Head broad, not strongly depressed, 1.9–2.5 in standard length, breadth of head about equal to, usually very slightly less than, length; 1.9–2.9 in standard length. Eye round, orbit diameter 3.2–4.9 in head. Interorbital width about equal to eye in large specimens, less in smaller specimens, 2.7–5.2 in head length. Snout a little longer than eye, bluntly rounded, 2.6–3.7 in head. Anterior and posterior nostrils tubular, anterior nostril with a simple expanded dermal flap on posterior rim. Mouth terminal, upper jaw 2.4–3.3 in head, breadth of mouth at posterior angles of jaws 1.4–3.2 in head, broadening with increase in standard length. Teeth mainly conical, enlarged, prominent, and slightly compressed in front.

Dorsal and anal fins in posterior third of body. Anus well anterior to dorsal origin. Urogenital papilla of male very much larger than that of female. Pelvic disc single, length 2.6–3.2 in standard length. Caudal fin subtruncate. Caudal peduncle 2.3–4.3 (3–4 in most specimens) in head length, longer than deep, depth 4.3–5.8 in head length.

Colouring: Very variable; most specimens pinkish or greenish mottled to match surroundings. Underparts creamy.

Habitat: Intertidal and infratidal; clings to rocks.

Distribution: Alexander Bay (South African Museum); Port Nolloth to northern Natal (Zululand) coast (Smith, 1964).

Remarks

This is the only species of clingfish that is common on South West African shores.

Eckloniaichthys scylliorhiniceps Smith, 1943

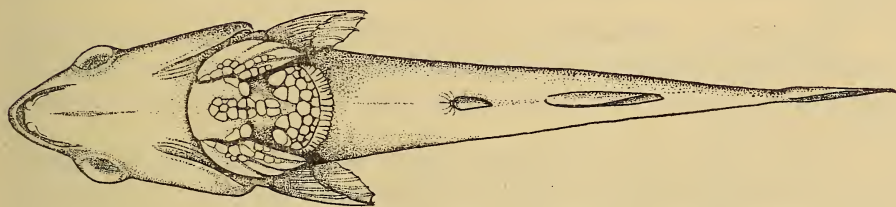
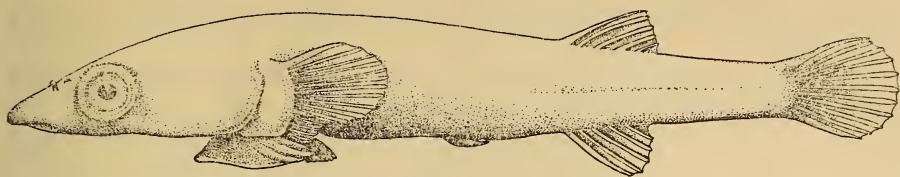
(Fig. 4)

Eckloniaichthys scylliorhiniceps Smith, 1943: 67, fig. 1; 1949: 384, pl. 87 fig. 1087; 1964: 584, pl. 92 D, pl. 93 D, E. Briggs, 1955: 72.

Material: 1 specimen, 15 mm standard length, S.A.M. 25249, intertidal pool, Agate Beach, Lüderitzbucht.

Description: D. 5; A. 5; P. 18; C. 10. Gills three. Each gill arch with four minute gill-rakers. Maximum depth of body 7.5 in standard length.

Head depressed, 3.0 in standard length, maximum breadth of head 5.0 in standard length. Eye round, orbit diameter 5.0 in head. Interorbital width equal to orbit diameter. Snout twice length of eye, narrowly rounded, 2.5 in head. Mouth subterminal, inferior, upper jaw 5.0 in head, width of mouth at



5 mm

Fig. 4. *Eckloniaichthys scylliorhiniceps* Smith.

posterior angles of jaws 5.0 in head. Teeth minute, bluntly conical in upper jaw, lower jaw with six blunt incisiform teeth at front of jaw, followed by three caniniform teeth on either side.

Dorsal and anal fins in posterior fourth of body. Anus in front of dorsal origin. A flat fleshy pad on lower part of pectoral base. Pelvic disc single, length 5.0 in standard length. Caudal peduncle 1.7 in head length, much longer than deep, depth 5.0 in head length. Caudal fin rounded.

Colouring: Upper parts plain dark olive brown, lower parts creamy.

Habitat: Clinging to kelp stipe in intertidal gully.

Distribution: Sea Point (west coast of Cape Peninsula) (South African Museum); False Bay to East London (Smith, 1964); Kei River mouth (South African Museum).

Remarks

This small, rather rare clingfish is always found attached to algae. On the west coast, where it has been found only on kelp (*Ecklonia* and *Laminaria*), it

is brown; from False Bay eastwards it usually occurs on *Caulerpa*, and is then bright green.

The Lüderitzbucht specimen is a female; males of this species are easily distinguished by the very large urogenital papilla.

REMARKS ON DISTRIBUTION

The known distribution of the three species of clingfishes recorded from South West Africa is shown in figure 5. Two of the species, *Chorisochismus dentex* and *Eckloniaichthys scylliorhiniceps*, appear to be endemic to the southern African region, while the third is very widely distributed from northern West Africa to southern Africa.

Chorisochismus dentex is the only really common intertidally occurring clingfish on the southern African coast. It is one of the few endemic southern African intertidal fish species that extend to the northern coast of South West Africa.

Eckloniaichthys scylliorhiniceps is known from relatively few specimens, probably mainly because it is a minute and very cryptic species and its habitat is difficult to sample. Both it and *Apletodon pellegrini* are likely to be found at further localities.

At the present state of knowledge, there are several considerable gaps in the distribution of *Apletodon pellegrini*, the greatest of which are the stretches of coast between Dakar and Annobón Island, Annobón Island and Moçamedes, and Rocky Point and Lambert's Bay. Considering that these fishes are small and inconspicuous, and the intertidal zone of the shore in tropical West Africa is poorly known, at least some of these gaps may be apparent rather than real. However, Rocky Point and Lambert's Bay both lie in transitional areas where, owing to changing hydrographic conditions, overlap of different faunal provinces occurs. Between them is the stretch of coast where very low temperatures prevail owing to the Benguela upwelling system; if *Apletodon pellegrini* really is absent from this region, its absence may be related to hydrographic conditions.

SUMMARY

Three species of clingfishes are recorded from South West Africa, a region from which no clingfishes were previously known. In the light of the South West African material, a southern African species is synonymised with a species from northern West Africa. The South West African material is described, and the distribution of the three species is briefly discussed.

ACKNOWLEDGEMENTS

I am grateful to the South African National Committee for Oceanographic Research for a grant towards the expenses of one of the expeditions to South

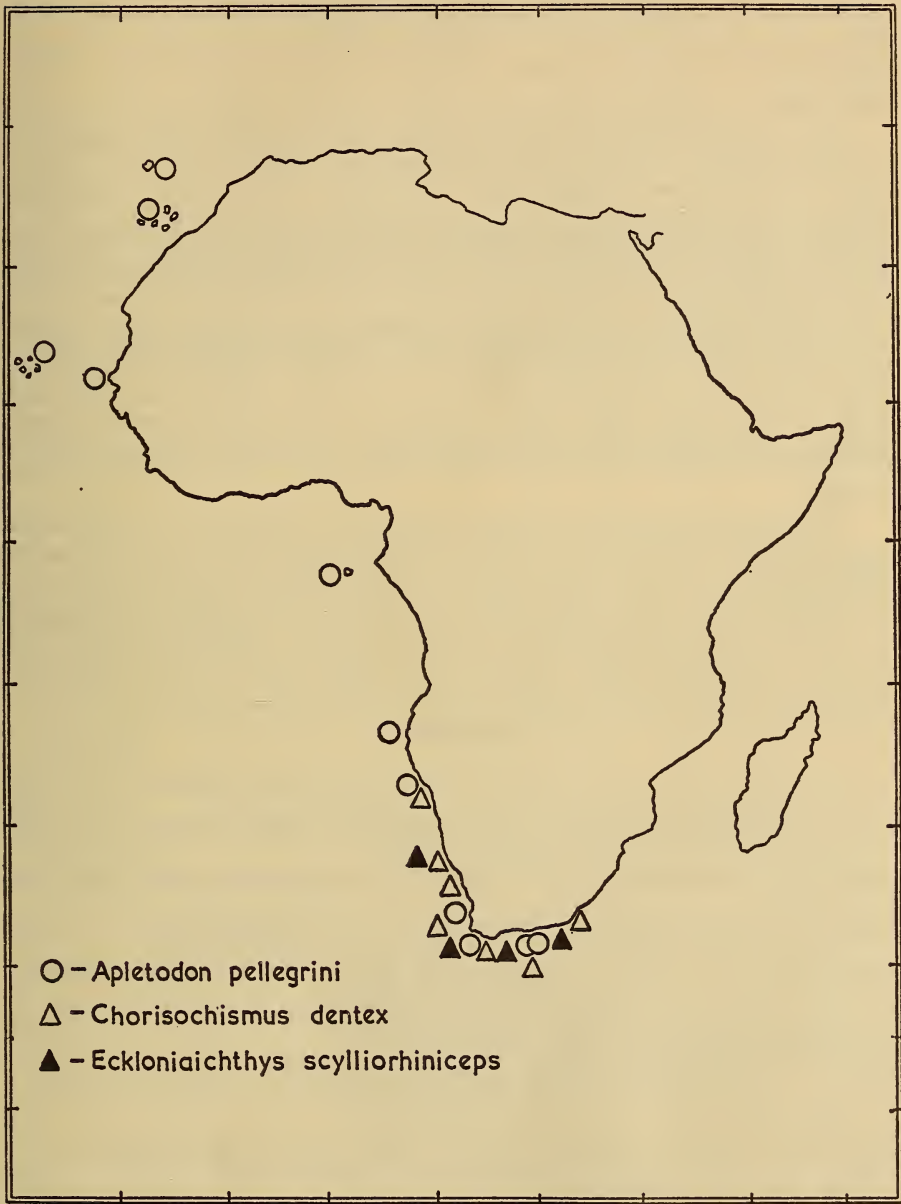


Fig. 5. Distribution of *Apletodon pellegrini*, *Chorisochismus dentex* and *Eckloniaichthys scylliorhiniceps*.

West Africa and Angola. I am indebted to the South West African Administration, and in particular Mr. C. G. Coetzee, Director of the State Museum, Windhoek, for making it possible for me to visit the northern coast of South West Africa.

My grateful thanks are due to those who assisted in the collection of material: Mr. M. J. Penrith, of the Oceanography Department, University of Cape Town; Mr. C. G. Coetzee, Dr. P. G. Olivier, and J. Batista of the State Museum, Windhoek; Mr. B. F. Kensley, of the South African Museum; Mr. C. D. Berrisford, of the Council for Scientific and Industrial Research, Durban; Mr. N. A. S. Reay.

I am indebted to the following individuals for the loan of material for comparison: Mrs. M. M. Smith, of the J. L. B. Smith Institute of Ichthyology, Rhodes University, Grahamstown; Dr. M. L. Bauchot, of the Muséum National d'Histoire Naturelle, Paris; Dr. J. Nielsen, of the Universitets Zoologiska Museum, Copenhagen; Dr. P. J. Whitehead, of the British Museum (Natural History).

My very grateful thanks are due to Mr. B. F. Kensley for the illustrations used in figures 2, 3, and 4, and to Mr. M. J. Penrith for commenting on the manuscript.

The Trustees of the South African Museum are grateful to the Council for Scientific and Industrial Research for a grant to publish this paper.

REFERENCES

- BARNARD, K. H. 1925-27. A monograph of the marine fishes of South Africa. *Ann. S. Afr. Mus.* **21**: 1-1065.
- BLANC, M., CADENAT, J. & STAUCH, A. 1968. Contribution à l'étude de l'ichthyofaune de l'île Annobón. *Bull. Inst. fond. Afr. noire (A)* **30**: 238-256.
- BRIGGS, J. C. 1955. A monograph of the clingfishes (order Xenopterygii). *Stanf. ichthyol. Bull.* **6**: 1-224.
- CHABANAUD, P. 1925. *Lepadogaster (Mirbelia) bimaaculatus* Penn., *microcephalus* Brook et Pellegrini, nov. sp. (Pisces Gobiesocidae). *Bull. Mus. Hist. nat., Paris* **1925**: 283-287.
- GÜNTHER, A. C. L. G. 1861. *Catalogue of the acanthopterygian fishes in the collection of the British Museum*. **3**. London: Trustees of the British Museum.
- MURGOCI, A. 1964. Contribution à la connaissance des gobiesocides (ordre des Xenopterygii) de la mer Noire. *Rev. roum. Biol. (Zool.)* **9**: 297-306.
- PALLAS, P. S. 1769. *Spicilegium zoologica . . . 7*. Berolini. (Not seen.)
- SMITH, J. L. B. 1943. Interesting fishes of three genera new to South Africa, with a note on *Mobula diabolus* (Shaw). *Trans. R. Soc. S. Afr.* **30**: 67-77.
- SMITH, J. L. B. 1949. *The sea fishes of southern Africa*. Cape Town: Central News Agency.
- SMITH, J. L. B. 1964. The clingfishes of the western Indian ocean and the Red Sea. *Ichthyol. Bull. Rhodes Univ.* **30**: 581-596.

INSTRUCTIONS TO AUTHORS

Based on

CONFERENCE OF BIOLOGICAL EDITORS, COMMITTEE ON FORM AND STYLE. 1960.

Style manual for biological journals. Washington: American Institute of Biological Sciences.

MANUSCRIPT

To be typewritten, double spaced, with good margins, arranged in the following order: (1) Heading, consisting of informative but brief title, name(s) of author(s), address(es) of author(s), number of illustrations (plates, figures, enumerated maps and tables) in the article. (2) Contents. (3) The main text, divided into principal divisions with major headings; sub-headings to be used sparingly and enumeration of headings to be avoided. (4) Summary. (5) Acknowledgements. (6) References, as below. (7) Key to lettering of figures. (8) Explanation to plates.

ILLUSTRATIONS

To be reducible to $4\frac{3}{4}$ in. \times 7 in. ($7\frac{1}{2}$ in. including caption). A metric scale to appear with all photographs.

REFERENCES

Harvard system (name and year) to be used: author's name and year of publication given in text; full references at the end of the article, arranged alphabetically by names, chronologically within each name, with suffixes *a*, *b*, etc. to the year for more than one paper by the same author in that year.

For books give title in italics, edition, volume number, place of publication, publisher.

For journal articles give title of article, title of journal in italics (abbreviated according to the *World list of scientific periodicals*, 4th ed. London: Butterworths, 1963), series in parentheses, volume number, part number (only if independently paged) in parentheses, pagination.

Examples (note capitalization and punctuation)

BULLOUGH, W. S. 1960. *Practical invertebrate anatomy*. 2nd ed. London: Macmillan.

FISCHER, P.-H. 1948. Données sur la résistance et de le vitalité des mollusques. *J. Conch., Paris* **88**: 100-140.

FISCHER, P.-H., DUVAL, M. & RAFFY, A. 1933. Etudes sur les échanges respiratoires des littorines. *Archs Zool. exp. gén.* **74**: 627-634.

KOHN, A. J. 1960a. Ecological notes on *Conus* (Mollusca: Gastropoda) in the Trincomalee region of Ceylon. *Ann. Mag. nat. Hist.* (13) **2**: 309-320.

KOHN, A. J. 1960b. Spawning behaviour, egg masses and larval development in *Conus* from the Indian Ocean. *Bull. Bingham oceanogr. Coll.* **17** (4): 1-51.

THIELE, J. 1910. Mollusca: B. Polyplacophora, Gastropoda marina, Bivalvia. In Schultze, L. *Zoologische und anthropologische Ergebnisse einer Forschungsreise im westlichen und zentralen Süd-Afrika*. **4**: 269-270. Jena: Fischer. *Denkschr. med.-naturw. Ges. Jena* **16**: 269-270.

ZOOLOGICAL NOMENCLATURE

To be governed by the rulings of the latest *International code of zoological nomenclature* issued by the International Trust for Zoological Nomenclature (particularly articles 22 and 51). The Harvard system of reference to be used in the synonymy lists, with the full references incorporated in the list at the end of the article, and not given in contracted form in the synonymy list.

Example

Scalaria coronata Lamarck, 1816: pl. 451, figs 5 *a*, *b*; Liste: 11. Turton, 1932: 80.